

COURSE CODE	COURSE TITLE	L	T	P	C
1152CS206	STATISTICAL METHODS FOR DATA SCIENCE	3	0	2	4

Course Category: Program Elective

A. Preamble:

This course introduces to the concepts of Statistical Methods for Data Analysis.

B. Prerequisite Courses:

Sl. No	Course Code	Course Name
1	1150MA201	Applied Statistics

C. Related Courses:

Sl. No	Course Code	Course Name
1	1152CS139	Data Science

D. Course Outcomes:

Upon the successful completion of the course, students will be able to:

CO Nos.	Course Outcomes	Knowledge Level
CO1	Explain the Basic Statistical Concepts	K2,S2
CO2	Apply the concept Comparing Means in given data	K3,S2
CO3	Experiment the Chi-Square Test and Correlation Analysis	K3,S2
CO4	Explain about Multiple Regression and Logistic	K2,S2
CO5	Demonstrate the concepts Data Reduction and Scale Reliability	K2,S2

E. Correlation of COs with POs:

Cos	PO1	PO2	PO3	PO4	PO5		PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	M	M	L	L									L	M		
CO2	H	M	L	L					L					H	L	
CO3	M	M	L	M	M				M				L	M	M	
CO4	H	H	M	L									M	M		
CO5	M	M	M	L	M				M				L	M	L	L

H- High; M-Medium; L-Low

F. Course Content

UNIT I Basic Statistical Concepts and Descriptive Statistics **9**

SPSS-Research in Behavioral Sciences- Types of Variables- Hypothesis Testing - Descriptive Statistics: Basic Concepts

UNIT II Comparing Means **9**

Comparing Means: t-test and z-test, One Sample t-test, Independent Samples t-test; Dependent Samples t-test; Analysis of Variance- ANOVA Procedure- Factors and Covariates- Main Effects and Interactions- Post-Hoc Multiple Comparisons; Two-Way Between-Groups ANOVA

UNIT III Chi-Square Test and Correlation Analysis **9**

Chi-Square Test of Independence- Contingency Tables-Correlation, Nature of Variables- Bivariate/Partial Correlation

UNIT IV Multiple Regression and Logistic **9**

Regression Coefficient, R Values, Multiple Regression Types; Logistic Regression Coefficients Fit Indices- Logistic Regression Types

UNIT V Data Reduction and Scale Reliability **9**

Factor and Component- Extraction- Factor Loadings- Rotation- Communalities- Eigenvalue and Scree Plot- Scale Reliability

List of Lab Experiments **P-30**

1. Calculate some basic descriptive statistics for this data
2. t-test
3. One-Way ANOVA
4. Chi-square test
5. Correlation Bivariate
6. Correlation Partial
7. Regression Multiple
8. Regression Logistic
9. Data reduction
10. Reliability Analysis

Total: 75 Hours

G. Learning Resources

i. Text Book

1. “Statistical Methods for Practice and Research: A guide to data analysis using SPSS” by Ajai S. Gaur, Sanjaya S. Gaur